ICHTHYOLOGY.—Bathypterois pectinatus, *a new bathyal iniomous fish from the eastern Pacific.*

GILES W. MEAD, United States Fish and Wildlife Service.[1]

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The holotype of the distinctive species described below has been available during my review of the western Atlantic fishes of the family Bathypteroidae. It was compared with all known north Atlantic species (Mead, 1959: 369); with the type or syntypes of the Pacific *Bathypterois ventralis* Garman, *B. pectoralis* Garman, and *B. antennatus* Gilbert; with specimens representing *B. longipes* Günther and several variations of the cosmopolitan but poorly-understood groups of species now known as *B. antennatus* and *B. atricolor*. The study of a second specimen, caught by the *Vema*, has shown clearly that this form is not an extralimital subspecies or variant of the Atlantic *B. quadrifilis* Günther but a distinct although related species.

Bathypterois (Bathypterois) pectinatus, n. sp.
Fig. 1

Holotype.—A specimen 142.1 mm in standard length caught by the U. S. Fish Commission steamer *Albatross* at station D. 4654, 24 miles off Aguja Point, Peru (lat. 05°46′ S., long. 81°32′ W.) on November 12, 1904, at a depth of 1,036 fathoms. U. S. National Museum no. 150029.

Paratype.—A 123.0-mm specimen taken by the R. V. *Vema* of the Lamont Geological Observatory from L.G.O. Biotrawl no. 122, Panama Bay (lat. 07°25′ N., long. 79°23′ W.) on November 14, 1958, at a depth of 956 fathoms (corrected). American Museum of Natural History no. 20401.

Diagnosis.—Posterior ventral procurrent caudal ray modified into a hook or notch. Upper prolonged and stiffened pectoral rays fused basally but divided from one another at a point anterior to the origin of the dorsal fin; these upper strong rays followed by at most one rudimentary pectoral ray. Base of lowermost pectoral fin ray about as thick as that of the adjacent ray. Scales beneath proximal part of pectoral fin strongly pectinate. Body black and without pattern; the edges of the scale pockets white. Caudal fin white; dorsal, anal, and ventral fins dusky.

Bathypterois pectinatus is closely related to *B. quadrifilis*, a species known from the western Atlantic (off Brazil, in the Gulf of Mexico and the western Caribbean, and off Grenada and St. Vincent in the British West Indies) at depths from 470 to 655 fathoms. It differs from *B. quadrifilis* in the thickness of the lowermost pectoral ray, by its colorless caudal fin and dusky dorsal and anal fins (all are black in *B. quadrifilis*), by its less-deep body, and in the extent of the scaly covering over the proximal part of the caudal fin (this covering extends out on to the caudal lobes in *B. quadrifilis* but is restricted to the area over the bases of the caudal rays in *B. pectinatus*).

Description.—The following counts and measurements (expressed in percent of standard length) are those of the holotype (142.1 mm) followed, in parentheses, by those of the paratype (123.0):

D.—14 (14). A.—9 (9). P. (upper part)—2,0/2,1 (2,1/2,1). P. (lower part)—9/9 (9/9). V.—8/9 (9/9). C.—I-16-II. Gill rakers (first arch)—12 + 1 + 29 (12 + 1 + 30). Branchiostegal rays —4 + 8 (5 + 8). Scales in lateral line—about 62. Vertebrae—59.

Length of head 21.3 (21.3), of snout 7.1 (6.7), of upper jaw 13.6 (13.3). Diameter of eye 2.0 (2.4); width of bony interorbital 7.9 (8.3). Greatest depth of body 14.6 (14.4), depth at origin of anal fin 10.6 (10.7), least depth of caudal peduncle 7.1 (7.0). Greatest width of body 8.2 (8.1). Snout to origin of dorsal fin 40.1 (41.3), to origin of anal fin 55.4 (55.7), to insertion of pectoral fin 18.3 (19.4), to insertion of ventral fin 35.5 (37.3). Base of last dorsal ray to insertion of adipose fin 23.7 (22.6); insertion of adipose fin to dorsal procurrent caudal ray 21.5 (22.2); base of last anal ray to ventral procurrent caudal

[1] One of the specimens on which this account was based was caught by the 1958 eastern Pacific cruise of the *Vema*, research vessel of the Lamont Geological Observatory, Columbia University, and was made available by Dr. Robert J. Menzies of that laboratory through Dr. Vladimir Walters of the American Museum of Natural History. Partial support for this cruise of the *Vema* was obtained from the U. S. Navy, Office of Naval Research, the Bureau of Ships, and the National Science Foundation. This paper constitutes contribution no. 363 of the Lamont Geological Observatory and no. 11 of the Biology Program.

ray 33.8 (32.6); insertion of ventral fin to anus 13.0 (11.8); anus to origin of anal fin 6.8 (7.6). Length of base of dorsal fin 13.2 (13.7), of anal fin 8.2 (8.1). Length of longest pectoral fin ray 89.6 (96.0), of longest ventral fin ray 32.2 (28.1).

Body compressed, snout depressed. Body deepest at origin of dorsal fin, this depth 1.5 in length of head. Depth at origin of anal fin 2.0 in head; least depth of caudal peduncle 3.0 in head. Greatest width of body, anterior to dorsal fin, 1.8 in greatest depth.

Cheeks, top of head posterior to eye, and body covered with scales. Most body scales cycloid; those beneath anterior end of lower part of pectoral fin strongly pectinate and more adherent than most body scales. Body scales extend onto caudal fin; all other fins scaleless. One or two lateral line scales on caudal fin above the mid-caudal ray.

Head 4.7 in standard length, depressed and slightly convex above and before eye. Snout 3.0 to 3.2 in length of head. Sensory pores of head well developed, 4 to 6 in the horizontal series below the eye, about 8 along the lower outer surface of the mandible, and about 4 in each longitudinal series on top of head. Olfactory organ slightly closer to eye than to tip of snout, the nostrils separated by a thin membrane which bears a short flap.

Eye minute but larger than that of several other bathypteroid species, its greatest diameter equal to or greater than the combined width of the upper jaw bones (maxillary and supramaxillary) at their widest point. Pupil elliptical, but not keyhole-shaped. Interorbital broad and convex, 2.5 to 2.7 in length of head.

Branchiostegal membrane extending posteriorly beyond opercular, supported by 12 or 13 branchiostegal rays of which four or five originate on the epihyal. The membranes overlap anteriorly and are covered by a thick transverse gular fold. Gill rakers on all four arches, of the usual lathlike shape, spiny, and moderately long. Those near the angle of the first arch are about twice as long as the opposite gill filaments. No pseudobranchiae.

Maxillary broad and flat posteriorly, extending beyond posterior end of the premaxillary and surmounted by a slender supramaxillary which extends forward nearly or quite to beneath the posterior edge of the eye. Teeth on premaxillary minute, mostly depressible, and in a single band which is broader anteriorly than posteriorly. Symphysis of upper jaw without teeth. A patch of minute teeth on each side of the vomer, and a row of smaller teeth on each palatine. Mandible broad and heavy, with a bony toothless boss at the symphysis, the anterior half not included within or opposed to the upper jaw when the mouth is closed. Teeth in mandible small but larger than those in upper jaw, depressible and forming a band which is broader anteriorly than posteriorly. No teeth on the small tongue.

Dorsal fin inserted well behind axil of ventral fin, the length of its base 1.6 in length of head. Predorsal distance 2.4 or 2.5 in standard length. First two dorsal rays unbranched, the rest branched, the last divided to its base. Adipose

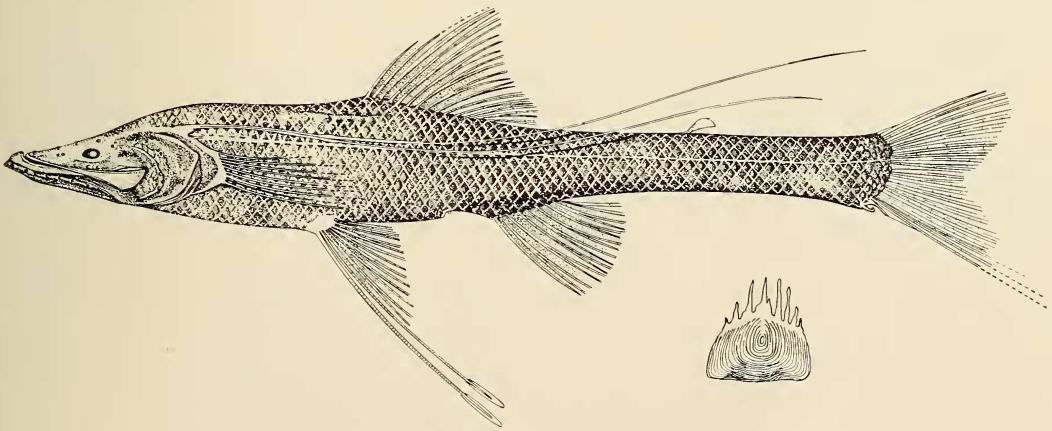

Fig. 1.—*Bathypterois* (*Bathypterois*) *pectinatus*, holotype, U.S.N.M. no. 150029. The figured scale was taken from beneath the anterior third of the lower part of the pectoral fin. (Drawn by Mildred H. Carrington.)

dorsal fin located about midway between posterior end of base of dorsal fin and first dorsal procurrent caudal fin ray, or slightly closer to end of base of dorsal fin. (The position of the adipose fin is variable in several bathypteroid species.) Preventral distance 2.7 or 2.8 in standard length, the length of the fin 3.1 to 3.6 in length of fish. Ventral fin normally with nine rays, but one side of the type has but eight. (The number of ventral rays is constant in the western Atlantic species.) The outer two ventral rays are simple, the rest branched. Base of second ventral ray about the same thickness as that of the third. Origin of anal fin behind a vertical from end of base of dorsal fin, the preanal distance 1.8 in standard length. First anal ray unbranched, the rest branched, the last divided to its base. (All fins except the ventrals and the adipose are broken in both specimens.) Upper two pectoral fin rays stiffened and elongate and fused basally, separating from one another anterior to the origin of the dorsal fin and extending beyond end of base of dorsal fin nearly to base of caudal. One or no rudimentary rays below these two fused and prolonged upper pectoral rays. All rays in lower part of pectoral fin broken.

Anus located about midway between insertion of base of inner ventral ray and origin of anal fin. A small urogenital papilla present, preceded by the ovopore.

Body black and without pattern. Edges of scale pockets white. Caudal and adipose fins white. All other fins, snout and under surface of lower jaw dusky.

LITERATURE CITED

MEAD, GILES W. *Three new species of archibenthic iniomous fishes from the western North Atlantic.* Journ. Washington Acad. Sci. **48**: 362–372. 1959.

Happy is he who has knowledge
That comes from inquiry. No evil he stirs
For his townsmen, nor gives himself
To unjust doings,
But surveys the unaging order
Of deathless nature, of what it is made,
And whence, and how.
In men of this kind the study
Of base acts never finds a home.

—EURIPIDES.

EDITOR'S NOTE.—The August and September numbers of the Journal are combined in one issue, as will also be the October and November numbers. Only 10 issues will be published in Volume 49.